231. ROLE OF MATRIX METALLOPROTEINASES IN ANGIOGENESIS AND PROGRESSION OF ATHEROSCLEROTIC PLAQUE

Author: **Ana-Iulia Pîrțu**
Scientific adviser: Elena Portnoi, MD, University assistant, Department of Morphopathology
Nicolae Testemitanu State University of Medicine and Pharmacy of the Republic of Moldova

Introduction. Atherosclerosis is a chronic disease characterized by multifocal structural alterations of the vascular wall of medium and large arteries, leading to the accumulation of cholesterol and continuous inflammation. Inflammatory angiogenesis in atherosclerotic lesions plays a major role in plaque progression and instability.
Aim of the study. The review examines the role of the MMPs in plaque angiogenesis, destabilization, and its relation to inflammation.
Materials and methods. Informational support for the development of this review is based on current international journals, including more than 50 references in English and Russian languages.
Results. It is firmly established that extracellular proteolysis mediated by MMPs is an absolute requirement for angiogenesis. MMPs released by inflammatory cells, are implicated in the sprouting phase, including basement membrane degradation and cell migration/ECM invasion. The neovascularization prevents cellular death due to better supply of O2 and nutrients. But simultaneously allows lipid core expansion, leukocyte afflux, plaque growth and destabilization due to the compromised structural integrity of imature vessels (discontinuous basement membrane, low number of tight junctions between the ECs, lack in pericyte coverage)highly susceptible to intraplaque hemorrhage. In atherosclerotic plaques, MMPs not only induce the

sprouting of neovessels but also can provoke net destruction of collagen in the shoulder regions of fibro-atheromas and thus contribute to the weakening of the fibrous cap and precipitate transition to an unstable lesion, plaque rupture, leading to myocardial infarctions or strokes. Furthermore, specific MMPs have been shown to enhance angiogenesis by releasing ECM-bound angiogenic growth factors.

Conclusions. By providing pathological angiogenesis MMPs may induce plaque growth, maintenance or destabilizing of the atherosclerotic plaque.

Key words: atherosclerosis, angiogenesis, matrix metalloproteinases